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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,011	07/11/2005	Dominique Bras	Serie 5957	4858
Air Liquide Intellectual Property Department 2700 Post Oak Blvd Suite 1800 Houston, TX 77056				
7550 06/11/2009			EXAMINER WU, IVES J	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 06/11/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/521,011

Applicant(s)

BRAS ET AL.

Examiner

IVES WU

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 April 2009.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-22 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 12-15 is/are allowed.
6) ☒ Claim(s) 16, 18-20, 22 is/are rejected.
7) ☒ Claim(s) 17 and 21 is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

(1). Applicants' Amendments and Remarks filed on 4/2/2009 have been received.

Claim 16 is amended. Claims 1-11 are cancelled before.

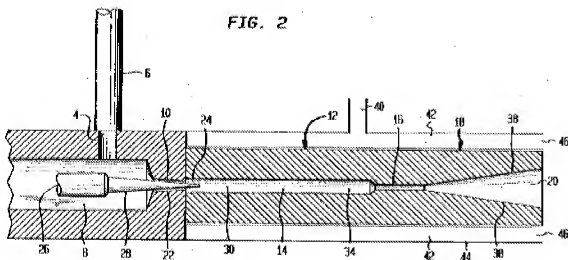
The rejection of claim 16 in prior Office Action dated 12/2/2008 is revised and presented with rest of claims in the following.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(2). **Claims 16, 22** are rejected under 35 U.S.C. 102(b) as being anticipated by Whitlock et al (US 4806171).

As to an apparatus comprising a) a variable flow expansion valve in **independent claim 16**, Whitlock et al (US 4806171) disclose apparatus and method for removing minute particles from a substrate (Title). As shown in the Figure below, it includes a variable expansion valve 28. The 1st orifice 10 may be equipped with a standard needle valve 26 having a tapered snout 28 which is movable within the 1st orifice 10 to control the flow of the fluid carbon dioxide (Col. 3, line 57-62).



As to an apparatus comprising b) an injector connected to a chamber, wherein chamber contains a gas stream in **independent claim 16**, Whitlock et al (US 4806171) disclose the apparatus in Figure above, the ejection spout 18 with wall 44, which reads on the injector as claimed. The gas stream in the chamber is considered as material to be worked upon.

As to an apparatus comprising c) a T-piece having an upper end, a lower end, and a side, wherein upper end of T-piece is connected to an outlet of valve, and lower end of T-piece to be connected to injector in **independent claim 16**, Whitlock et al (US 4806171) disclose wall 44 and inlet 40 as side, opening 24 as upper end connecting the expansion valve, downstream of T is connected to injection which reads on the limitations of instant claim.

As to an apparatus comprising d) device adapted to supply valve with liquid carbon dioxide in **independent claim 16**, Whitlock et al (US 4806171) disclose liquid dioxide inlet 6 as shown in the Figure above.

As to an apparatus comprising e) a device for feeding T-piece with an inerting gas, device for feeding T-piece being connected to side of T-piece in **independent claim 16**, Whitlock et al (US 4806171) disclose nitrogen gas receiving port 40 as shown in the Figure above.

As to a vaporization means for drawing off and vaporizing at least part of liquid carbon in **claim 22**, Whitlock et al (US 4806171) disclose means for enabling the fluid carbon dioxide to expand into respective portions of fine liquid droplets and gaseous carbon dioxide (Col. 2, line 51-53). As the fluid carbon dioxide flows through the 1st orifice 10 and out of opening 24, it expands along a constant enthalpy line to about 80-100 psia as it enters the rearward section 30 of the coalescing chamber 14 (Col. 4, line 66 – Col. 5, line 1).

As to a) vaporization means being located upstream of expansion valve in **claim 22**, Whitlock et al (US 4806171) disclose two stages of expansions (Col. 5, line 44-45). The rearward section 30 reads on the limitation as claimed.

As to b) drawn off and vaporized carbon dioxide being fed to injector in **claim 22**, Whitlock et al (US 4806171) disclose the larger liquid droplets/gas mixture which forms in the forward section 34 of the coalescing chamber forms a solid/gas mixture as it proceeds through 2nd orifice 16 and out of port 20, both of which have elongated openings to produce a flat, wide spray (Col. 6, line 28-31).

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

- (3). **Claims 18-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Whitlock et al (US 4806171).

As to length of injector located within chamber to be equal to about half the width of chamber in **claim 18**, it would be obvious to have the length of injector located within the chamber being equal to about half of the chamber in order to make the injection spreading uniformly in the chamber. "Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the applicant must show that the chosen dimension are critical". *In re Woodruff* 16 USPQ2d 1934 (Fed. Cir. 1990).

As to injector being made of a thermally insulated material in **claim 19**, and thermally insulated material to be polysulfone in **claim 20**, it would be obvious to have polysulfone for the thermal insulation of injector because chosen known material for suitability render obvious. *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960).

Allowable Subject Matter

- (4). **Claims 12-15** are allowed.

Claims 17 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

- (5). Applicant's arguments filed on 4/2/2009 have been fully considered but they are not persuasive.

Although applicants amend the instant claim 16 to further limit the T joint connections, The T shape connection disclosed in Figure 2 of Whitlock et al (US 4806171) still reads on the limitations because T- joint as claimed by Applicants may not be hollow, the upper end of T-shape connection also is opening 24 disclosed in Figure 2 of prior art Whitlock et al (US 4806171).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IVES WU whose telephone number is (571)272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Ives Wu
Art Unit: 1797
Date: June 9, 2009

/DUANE SMITH/
Supervisory Patent Examiner, Art Unit 1797